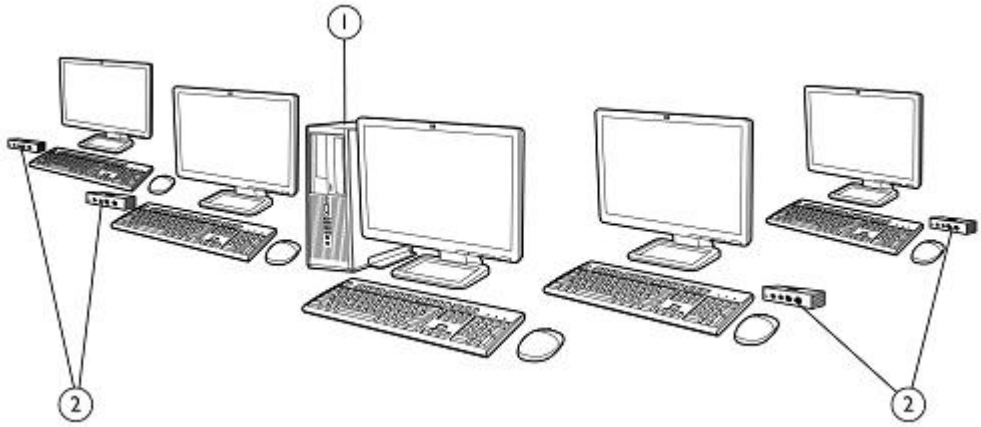
HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

This innovative shared resource computing solution from trusted industry leaders HP and Microsoft stretches your corporate computing budget by delivering the familiar, reliable computing experience to multiple users from a single, dedicated PC for maximum cost savings and power .

HP MultiSeat Computing Solution Components



1. HP MultiSeat ms6000/ms6005 Series Desktop; monitor (sold separately), keyboard and mouse
2. HP MultiSeat t100 or t150 Thin Client; monitor, keyboard and mouse (sold separately)

Part Numbers

	Standard OEM Edition (includes Microsoft CAL)	Academic Edition (does not include Microsoft CAL)
HP Compaq MultiSeat ms6000 Desktop (Essentials)	*BM458AW	BM460AW
HP Compaq MultiSeat ms6000 Desktop (Extended)	*BM459AW	BM461AW
HP Compaq MultiSeat ms6005 Desktop (Essentials)		QM952AW
HP Compaq MultiSeat ms6005 Desktop (Extended)		QM953AW
HP MultiSeat t100 Thin Client	*BM490AA	WB216AA
HP MultiSeat t150 Thin Client	*QM176AA	QM177AA

*Emerging Countries have alternate PN's

ms6000 Essentials configuration

Form factor	Small form factor
Operating system	Microsoft® Windows® MultiPoint™ Server
Chipset	Intel® Q43 Express
Processor	Intel® Core 2™ Duo E7500
Memory	2GB DDR3 (1333 MHz)
Hard drive	320 GB SATA 3.0Gb/s
Removable media	SATA DVD Writer Drive
Graphics	Integrated Intel® Graphics Media Accelerator 4500
Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)

HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

	Communications	Intel 82567LM Gigabit Network Connection
	Input devices	HP USB Standard Keyboard and USB optical scroll mouse
ms6000 Extended configuration		
	Form factor	Small form factor
	Operating system	Microsoft® Windows® MultiPoint™ Server
	Chipset	Intel® Q43 Express
	Processor[2]	Intel® Core 2™ Quad Q9500
	Memory	6GB DDR3 (1333 MHz)
	Hard drive	500 GB SATA 3.0Gb/s
	Removable media	SATA DVD Writer Drive
	Graphics	Integrated Intel® Graphics Media Accelerator 4500
	Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)
	Communications	Intel 82567LM Gigabit Network Connection
	Input devices	HP USB Standard Keyboard and USB optical scroll mouse
ms6005 Essentials configuration		
	Form factor	Small form factor
	Operating system	Microsoft® Windows® MultiPoint™ Server
	Chipset	AMD® 785G
	Processor[2]	AMD® Athlon II X2 B26 Processor
	Memory	2GB DDR3 (1333 MHz)
	Hard drive	250 GB SATA 3.0Gb/s
	Removable media	SATA DVD Writer Drive
	Graphics	Integrated ATI® Radeon HD 4200 Graphics
	Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)
	Communications	Broadcom NetXtreme Gigabit Ethernet BCM 5761
	Input devices	HP USB Standard Keyboard and USB optical scroll mouse
ms6005 Extended configuration		
	Form factor	Small form factor
	Operating system	Microsoft® Windows® MultiPoint™ Server
	Chipset	AMD® 785G
	Processor[2]	AMD® Phenom II X4 B97 Processor
	Memory	8GB DDR3 (1333 MHz)
	Hard drive	500 GB SATA 3.0Gb/s
	Removable media	SATA DVD Writer Drive
	Graphics	Integrated ATI® Radeon HD 4200 Graphics
	Audio	Realtek ALC261 HD Audio (Microsoft Multipoint Server 2010 does not currently support audio on the PC)
	Communications	Broadcom NetXtreme Gigabit Ethernet BCM 5761
	Input devices	HP USB Standard Keyboard and USB optical scroll mouse

HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

Operating System	Microsoft® Windows® MultiPoint™ Server NOTE: FreeDOS available with Academic edition only	
Value-added Software (not included with Academic edition)	PDF complete Microsoft Internet Explorer	
Chipset	**ms6000**	Intel Q43 Express
	ms6005	AMD 785G
Processors One of these:	**ms6000** Essentials configuration	Intel® Core™2 Duo E7500 (2.93 GHz, 3 MB L2 cache, 1066 MHz FSB)
	ms6000 Extended configuration	Intel® Core™2 Quad Q9500 (2.83 GHz, 6 MB L2 cache, 1333 MHz FSB)
	ms6005 Essentials configuration	AMD Athlon II X2 Processor B26 (3.2 GHz, 2 MB L2l cache, HT bus 3.0)
	ms6005 Extended configuration	AMD Phenom II X4 Processor B97 (3.2 GHz, 8 MB total cache, HT bus 3.0)

Memory

Supports un-buffered non-ECC DDR3 SDRAM

The Intel Q43 Express chipset supports un-buffered non-ECC DDR3 SDRAM (synchronous dynamic random access memory) at a frequency of up to 1333MHz.

AMD processors support un-buffered non-ECC DDR3 SDRAM (synchronous dynamic random access memory) at a frequency of up to 1333 MHz.

NOTE: 1066MHz system memory frequency of operation requires at least PC3-8500 (DDR3-1066) memory type for all populated memory modules, and an Intel processor with FSB (front side bus) of at least 1066MHz.

System Memory upgrades are accomplished by adding DDR3 SDRAM module(s) to empty DIMM slots on the System Board.

CAUTION: Voltage is supplied to the memory modules whenever the computer is connected to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board. The computer must be shut down with the AC power removed (disconnect AC power cord at rear chassis or at AC outlet) prior to adding or removing SDRAM modules.

HP recommends dual-channel symmetric configurations for the best memory performance. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. Do not inter-mix memory module speeds or memory operating frequency will default to lowest speed.

HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

Maximum Memory*

Supports up to 16GB of un-buffered non-ECC DDR3 SDRAM.
Slot 1 is black and must always be populated. Not all possible memory configurations are represented in the table below.

*For systems configured with more than 3GB of memory and a 32-bit operating system, all memory may not be available to the OS due to system resource requirements. Addressing memory above 4GB requires a 64-bit operating system.

Total Memory	DIMM Slot Population*			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (white)	4 (white)
2 GB (Dual Channel Symmetric)	1GB		1GB	
6 GB	2GB	2GB	2GB	
8 GB (Dual Channel Symmetric)	4GB		4GB	

* The Intel Q43 Express chipset includes an integrated Management Engine (ME) micro-controller, which requires system memory to support manageability functions. If the system memory configuration is single-channel or dual-channel asymmetric, 16MB of system memory is pre-allocated for the ME at system startup. If the memory configuration is dual-channel symmetric, 32 MB of memory is pre-allocated for the ME at system startup. This pre-allocated memory is not available to the operating system, just as pre-allocated video memory is not available.

Expandability

PCI slots	1 low profile
Max power per slot	35W
PCIe x1 slot	2
Max power per slot	10W
PCIe x16 slot (also functions as SDVO/ADD2 slot)	1 low-profile
Max power per slot	35W
External Bays	
3.5"	1
5.25"	1
IDE	
Internal 3.5" HDD Bays	1
Hard Drive Controller supported	SATA
Hard Drive Interfaces supported	SATA 3.0 Gb/s

Storage - Drive Support

	Media Card Reader	5.25" Serial ATA Devices	3.5" Serial ATA Devices
Qty Supported	1	1	2
Position Supported	2	2	2,3
Controller	USB/Diskette	SATA	SATA

HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

Hard Drive One or two of these:	**ms6000** Essentials configuration	320 GB SATA 3.0 Gb/s 16 MB cache, 10,000 rpm, NCQ, SMART III
	ms6000 Extended configuration	500 GB SATA 3.0 Gb/s 16 MB cache, 10,000 rpm, NCQ, SMART III
	ms6005 Essentials configuration	250 GB SATA 3.0 Gb/s 16 MB cache, 10,000 rpm, NCQ, SMART III
	ms6005 Extended configuration	500 GB SATA 3.0 Gb/s 16 MB cache, 10,000 rpm, NCQ, SMART III
Graphics	**ms6000**	Integrated Intel Graphics Media Accelerator 4500
	ms6005	Integrated ATI Radeon HD 4200
Network	**ms6000**	Intel 82567LM Gigabit
	ms6005	Integrated Broadcom NetXtreme Gigabit Ethernet BCM 5761
Audio*	Integrated high definition audio with Realtek ALC261 codec (all ports are stereo) Microphone and Headphone front ports Line-out and Line-in rear ports Internal speaker *Microsoft MultiPoint Server 2010 does not currently support audio on the PC	
Power Supply	240W 89% efficient power supply - active PFC	
Ports	**USB 2.0**	10 (4 front, 6 rear) Two (2) internal headers on system board
	Serial	1 standard
	PS/2	2 standard NOTE: PS/2 keyboard and mouse are not compatible with Windows® MultiPoint™ Server 2010 application
	Video	Analog for integrated graphics
	Audio	Front - mic and headphone Rear - input (supports microphone or line input), line out
Input Devices	USB Standard keyboard USB 2-Button Optical Scroll mouse	

HP MultiSeat ms6000/ms6005 Series Desktop – Standard Features

MultiSeat Configurations	Number of Users								
	2	3	4	5	6	7	8	9	10
Host PC version	Ess	Ess	Ess	Ext	Ext	Ext	Ext	Ext	Ext
Qty of t100's or t150's	1	2	3	4	5	6	7	8	9
Qty of Monitors	2	3	4	5	6	7	8	9	10
Qty of PS/2 Keyboards/Mice	1	2	3	4	5	6	7	8	9
Powered USB Hub required	no	no	no	no	no	no	no	no	yes

NOTE: Microsoft Multipoint Server 2010 does not currently support audio on the PC. To provide audio for all users, the host PC cannot be used as a user station.

MultiSeat Configurations with audio for all users	Number of Users								
	2	3	4	5	6	7	8	9	10
Host PC version	Ess	Ess	Ess	Ext	Ext	Ext	Ext	Ext	Ext
Qty of t100's or t150's	2	3	4	5	6	7	8	9	10
Qty of Monitors	3	4	5	6	7	8	9	10	11
Qty of PS/2 Keyboards/Mice	2	3	4	5	6	7	8	9	10
Powered USB Hub required	no	no	no	no	no	no	no	yes	yes

Dimensions & Weight

Chassis Dimensions (H x W x D)	3.95 x 13.30 x 14.90 in 10.03 x 33.78 x 37.85 cm
System weight*	16.0 lb (7.26 kg)
System volume	941.63 cu in
Shipping weight*	26.70 lb (12.11 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)
Shipping box dimensions (H x W x D)	9.72 x 19.68 x 22.67 in 246.9 x 499.9 x 575.8 mm

* Configured with 1 hard drive, 1 optical drive, no diskette drive, and no PCI card.

Service and Support

On-site Warranty and Service Note 1: This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labor and on-site repair. Response time is next business-day Note 2 and includes free telephone support Note 3 24 x 7. Global coverage Note 2 ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/regions do not offer one year onsite and labor. For HP Care Pack services see: http://www.hp.com/go/lookuptool.

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.

If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range

Operating: 50° to 95°F (10° to 35°C)*
Non-operating: -22° to 140 F (30° to 60 C)

Relative Humidity

Operating: 10% to 90% (non-condensing at ambient)
Non-operating: 5% to 95% (non-condensing at ambient)

Maximum Altitude (unpressurized)

Operating: 10,000 ft (3048 m)
Non-operating: 30,000 ft (9144 m)

*Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

Power Supply 240-watt 89% efficient BTX power supply - Active PFC

Operating Voltage Range	100-240VAC
Rated Voltage Range	115V/230V
Rated Line Frequency	50/60 Hz
Operating Line Frequency Range	47-63 Hz
Rated Input Current	4A
Heat Dissipation	Typical: 270 btu/hr (68 kg-cal/hr) Maximum 1025 btu/hr (258 kg-cal/hr)
Power Supply Fan	Variable speed fan

ROM BIOS Information

Key features of the HP BIOS include	• Deployment and manageability: HP BIOS provides several technologies that help integrate the HP Business desktop computer into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages. • Security: HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users. Ability to disable USB ports • Tracking and tracing capabilities in case of theft available in select countries (subscription sold separately). • Thermal and power management - The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment. • Serviceability - HP BIOS provides diagnostic and detailed service information.
Additional HP BIOS Features	• Administrator password - Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS. • Advanced Configuration and Power Interface (ACPI) - Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. • Mute internal speaker • Disable USB ports

Serviceability Features

System	• System/Emergency ROM • Flash ROM • CMOS Battery Holder for easy Replacement • Flash Recovery with Video • 5 Aux Power LED on System PCA • Processor ZIF Socket for easy Upgrade • Over-Temp Warning on Screen (Requires IM Agents) • Clear Password Jumper • DIMM Connectors for easy Upgrade • Restore CD • Clear CMOS Switch • NIC LEDs (integrated) (Green & Amber) • Dual Color Power LED on Front of Computer (Indicates Normal Operations and Fault Conditions)
Diagnostic LED Explanation Table	Number of 1-second red LED blinks followed by 2-second pause, then repeats: • 2-processor thermal protection activated • 3-processor not installed • 4-power supply failure • 5-memory error • 6-video error • 7-PCA failure (ROM detected failure prior to video) • 8-invalid ROM, bootblock recover mode

Chassis	• Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions • Color coordinated cables and connectors • Tool-less Hood Removal - spring-loaded latch • Front power switch • Tool-less Hard Drive, CD & Diskette Removal

Other Features

Towerable	Small Form Factor can be oriented as a tower (in addition to desktop orientation)
Drive Self Tests (DPS)	DPS Access through F10 Setup during Boot • Drive Protection System • A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user. • Running independently of the operating system, it may be accessed through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced. • The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures.
SMART IV Technology (Self-Monitoring, Analysis and Reporting Technology)	• Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted • Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count • By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure
Intel® Standard Manageability (ms6000 only)	All models feature Intel Standard Manageability technology including the following*: • Supports industry standards including DASH 1.1 and WSMAN. • Enables IT to manage and secure PCs even if they are off or the OS is inoperable. • Remotely manage power states, boot to a diagnostic image, edit the PC BIOS, and inventory software and hardware. • Hardware-level filtering can automatically remove an infected PC from the network while still keeping a connection to the management console for remote remediation. *PCs with Intel Standard Manageability include features of Intel Active Management Technology (Intel AMT). Intel AMT requires the computer system to have an Intel AMT-enabled chipset, network hardware and software, as well as connection with a power source and a corporate network connection. Setup requires configuration by the purchaser and may require scripting with the management console or further integration into existing security frameworks to enable certain functionality. For more information, see www.intel.com/technology/platform-technology/intel-amt/
DASH 1.1 support (Desktop and Mobile Architecture for System Hardware)	• A standards initiative for representing out-of-band management capability for computer systems. It is a secure, web-services based successor to ASF.
ASF 2.0 support (Alert Standard Format)	• Industry-standard specification for network alerting in operating system-absent environments
ACPI-Ready Hardware (Advanced Configuration and Power Management Interface)	• Allows the system to wake from a low power mode. • Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
SMBIOS Ver. 2.6	• System Management BIOS, previously known as DMI BIOS, for system management information

Wired for Management Support (ms6000 only)	• Intel-driven, industry-wide initiative to make Intel architecture-based PCs, servers and mobile computers more inherently manageable right out of the box and over the network
Dual-State Power Button	• Power button acts as both an on/off button and suspend-to-sleep button

High Definition Audio

Type	Integrated high definition 4-channel Realtek ALC261 stereo codec
Audio Jacks	• Front microphone-In (150-K ohm Input Impedance) • Rear Line-In/Microphone input (150-K ohm Input Impedance, function is configurable by audio driver) • Rear Line-Out* (190 ohms Output Impedance, expects at least a 10-K ohm load) • Front Headphone-Out (0.5 Ohm Output Impedance, expects at least a 32 ohm load) *Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally. Microsoft MultuiPoint Server 2010 does not currently support Audio in and out on the host PC.
Sampling	8 kHz - 192 kHz
Wavetable Syntheses (software)	Yes - Uses OS soft wavetable
Analog Audio	Yes
Number of Changes on Line Out (mono/stereo)	Stereo (Left & Right channels)
Internal Audio Speaker Power Rating	1.5W
Internal Speaker	Yes; ability to mute internal speaker through F10 Setup
External Speaker Jack (Line-Out)	Yes

Integrated Intel 82567LM Gigabit Network Connection

Connector	RJ-45
Controller	Intel 82567LM Gigabit platform LAN Connect Networking Controller
Memory	Integrated 96KbB on chip buffer memory
Data rates supported	10/100/1000 Mbps
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3ab and 802.3u compliant
Bus architecture	GLCI, LCI interface. Intel specific MAC to PHY interface
Data transfer mode	At gigabit GLCI (802.3 serdes) is for Data, LCI (parallel bus) for MDIO, at 10/100 LCI for both data and MDIO, GLCI is idle.
Power requirement	Require 3.3Vaux,1.8V and 1.0V or just 3.3V with integrated regulators Power consumption 1.16 Watts for 82566, whole LOM 2.53 Watts
Boot ROM support	Yes
Network transfer mode	Full-duplex Half-duplex (not available for the 1000BASE-T transceiver)

Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
Environmental	Operating Temperature: 32° to 131°F (0° to 55°C) To 70°C for external regulator Operating Humidity: 85% at 131°F (55°C)
Management capabilities	WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic.
Alerting	ASF 2.0 support, AMT 3.0 support

Integrated Broadcom NetXtreme Gigabit Ethernet BCM 5761

Connector	RJ-45
Controller	Broadcom 5761 PCI-Express LAN Controller
Memory	8 MB NVRAM serial Flash
Data rates supported	10/100/1000 Mbps
Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3ab, 802.3u, 802.3i, and 802.3x compliant
Bus architecture	PCI-E
Data path width	Single channel, PCI-E
Data transfer mode	Bus-master DMA
Power requirement	1.8W @ 3.3V
Boot ROM support	Yes
Network transfer mode	Full-duplex Half-duplex (not available for the 1000BASE-T transceiver)
Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)
Environmental	Operating Temperature: 32° to 131°F (0° to 55°C) Operating Humidity: 131° F (55° C) with 5% to 95% non-condensing humidity
Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility, ASF 2.0, DASH 1.0 and DASH 1.1 profiles

Integrated Intel Graphics Media Accelerator 4500

3D/2D Controller	Microsoft DirectX® 10 based with support for Pixel Shader 3.0
VGA Controller	Integrated VGA is physically limited p to 1680x1050@60Hz (widescreen), 32bits or 1600x1200 (Standard screen), 32bits
DisplayPort	Integrated, Multimode capable; supports HDCP
Bus Type	PCI Express™ x16
RAMDAC	Integrated, 350 MHz
Memory	Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content. For Vista, use of PAVP heavy mode preallocates an additional 96MB. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use.
Maximum Color Depth	32 bits/pixel
Maximum Vertical Refresh Rate	85 Hz at up to 1920x1440, 75 Hz at 2048x1536. Varies with mode and configuration. See table below.
Graphics/Video API Support	Microsoft DirectX® 10, OpenGL® 1.5 (OpenGL® 2.0 available in a driver update)
Resolutions Supported	NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

	Maximum Refresh Rate (Hz)
Resolution	Analog Connection
800x600	85
1024x768	85
1280x720	85
1280x1024	85
1440x900	75
1600x1200	85
1680x1050	75
1920x1080	85

Integrated ATI HD 4200 Graphics

Memory	Variable and User selectable in BIOS settings
Controller Clock Speed	500MHz
Maximum Color Depth	32 bpp
Multi-display Support	Yes
Graphics/Video API Support	Microsoft DirectX® 10, OpenGL® 2.0
Output connectors	1 VGA, 1 DisplayPort (Multi-Mode (DP++) 1.1a compliant
VGA DAC Frequency	400 MHz
Resolutions Supported	NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

	Maximum Refresh Rate (Hz)	
Resolution	Analog Connection	Digital Connection
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60

Eco-Label Certifications & declarations This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration (pending R&D testing)

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a typically configured product.

Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal operation	29.5659 W	28.7916 W	29.1392 W
Sleep (Energy Star low-power mode)	2.4243 W	2.6419 W	2.4196 W
Off	0.7496 W	0.9092 W	0.7371 W

FEMP Standby Power Compliant (<1W in S5 - Power Off)**
Power Consumption in ENERGY STAR Mode - Suspend to RAM (S3) (Instantly Available PC) <3W*

*Energy efficient power supply is a requirement for ENERGY STAR qualification in conjunction with a select range of processors and modules .
**Power consumption in the Off/Apparent Off mode is measured and reported with the network interface controller "Wake on LAN" feature disabled in F10 Setup (default is "enabled").

Heat Dissipation* 115 VAC 230 VAC 100 VAC

Normal Operation	101 BTU/hr	98 BTU/hr	100 BTU/hr
Sleep	8 BTU/hr	9 BTU/hr	8 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

*Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	27
Fixed Disk (random writes)	3.9	28

Batteries

The battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Li Ion

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Silver level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO 1043.
- This product contains 0% post consumer recycled plastic (by wt.)
- This product is 95.1% recyclable when properly disposed of at end of life.

Packaging Materials

- External:
  - Corrugated Carton: 1705 g
- Internal:
  - EPE-Expanded Polyethylene: 198 g
  - Polyethylene low density foam: 39 g
- The EPE-Expanded Polyethylene packaging material is made from 100% recycled content.
- The Polyethylene low density foam packaging material is made from 100% recycled content.
- The Corrugated Carton packaging materials contains at least 75% recycled content.

RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. As of July 1, 2006, RoHS substances are virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at: http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

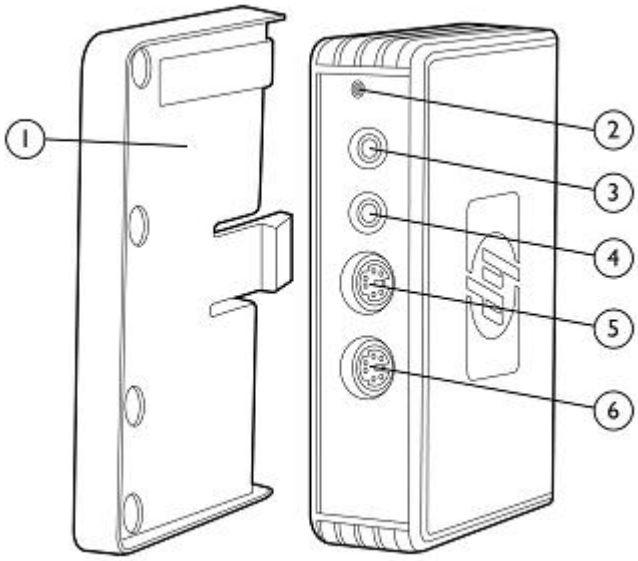
The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:
Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

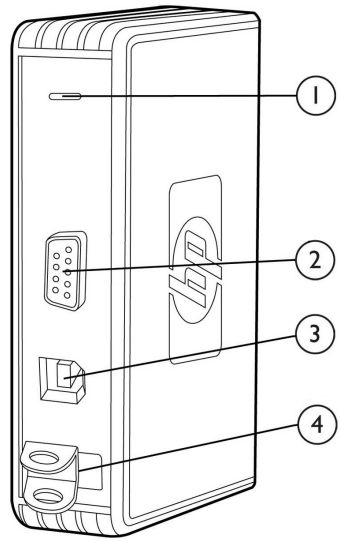
HP MultiSeat t100 and t150 Thin Client – Standard Features

HP MultiSeat t100 Thin Client



Front

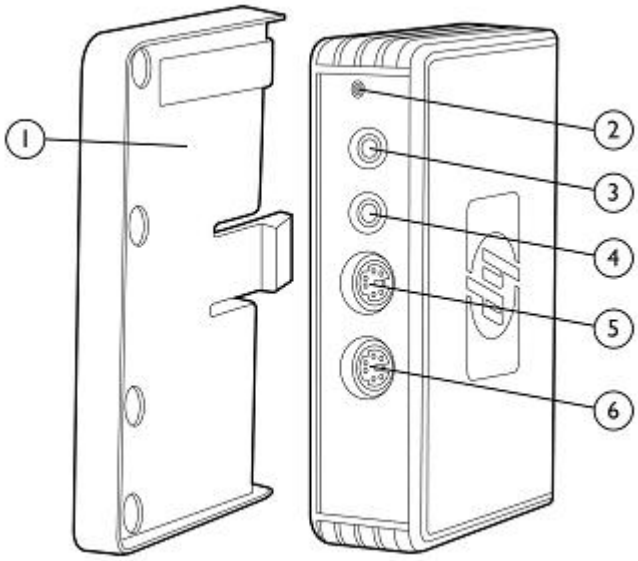
1. Mounting bracket
2. LED indicator
3. Audio connector (headphone out)
4. Audio connector (mic in)
5. PS/2 keyboard connector
6. PS/2 mouse connector



Back

1. Cable lock slot
2. VGA display connector
3. USB Type A connector
4. Locking security loop clip (can be manually installed)

HP MultiSeat t150 Thin Client



Front

1. Mounting bracket

(waiting on image)

Back

1. Cable lock slot

HP MultiSeat t100 and t150 Thin Client – Standard Features

2. Power LED
3. Audio connector (headphone out)
4. Audio connector (mic in)
5. PS/2 connectors
6. USB 2.0 connectors

2. DC power connector
3. VGA display connector
4. USB PC power connector to host PC (USB Type A/B cable included)
5. Security clip slot

Software Licensing	Microsoft Client Access License (CAL)

Power	**t100**	**t150**
Power supply	No external power supply	Optional external power supply*
Power output (max)	2.5W max	2.5W max with no external power supply 7.5W max with external power supply
LED	One blue LED to indicate power is on	One blue LED to indicate power is on

*External power supply required when using high-powered USB devices

Input/output connectors	**t100**	**t150**
USB input	1 USB in (Type B) to connect to host PC	1 USB in (Type B) to connect to host PC 2 USB 2.0*
Keyboard	PS/2	PS/2
Mouse	PS/2	PS/2
Video	VGA-type video output (DB-15)	VGA-type video output (DB-15)
Audio output	1/8-inch mini-jack, stereo	1/8-inch mini-jack, stereo
Audio input	1/8-inch microphone mini-jack, stereo	1/8-inch microphone mini-jack, stereo

*Data on USB devices is accessible by all users of the shared host system when using Windows MultiPoint Server 2010. For a list of supported USB devices, see http://technet.microsoft.com/en-us/library/wms-2010-usb-devices.aspx

Maximum recommended video resolution	1280x1024 (standard screen) 1440x900 (widescreen) 32 bit
Maximum video resolution	VGA is physically limited up to 1680x1050@60Hz (widescreen), 32bits or 1600x1200 (standard screen), 32bits
Hardware Security	Security lock slot (Kensington cable lock sold separately)

HP MultiSeat t100 and t150 Thin Client – Standard Features

Mounting	4 VESA holes; 2 spaced at 100 mm centers and 2 spaced at 75 mm centers
Dimensions H x W x D	Without mounting bracket: 1.11 x 4.4 x 2.56 in. (28.2 x 111.7 x 65 mm) With mounting bracket: 1.38 x 4.4 x 2.56 in. (34.8 x 111.7 x 65 mm
Weight (approximate)	Without mounting bracket: 4.78 oz. (135.7 g) With mounting bracket: 5.71 oz. (162.0 g)

Environmental

Operating temperature range	50° to 104° F/10° to 40° C Max rate of change is 18°F/10°C per hour
Non-operating temperature range	Operating: 10-90% (max wet bulb temperature 84.2°F/28°C) Non operating: 5-95% (max wet bulb temperature 101.6°F/38.7°C) NOTE: Specifications are at sea level with altitude de-rating of 1.8°F/1000ft (1°C/300m) to a maximum of 10,000 ft (3Km), with no direct, sustained sunlight. Upper range may be limited by the type and number of options installed.
Humidity (non-condensing)	Operating: 10,000 ft/3,048 m Max rate of change is 1500 ft/457m per minute Non-operating: 30,000 ft/9,144 m Max rate of change is 1500 ft/457m per minute
Maximum unpressurized altitude	Operating: 10,000 ft/3,048 m Max rate of change is 1500 ft/457m per minute Non-operating: 30,000 ft/9,144 m Max rate of change is 1500 ft/457m per minute

Regulatory Compliances

Product Safety	Certified to IEC EN 60950 and all applicable equivalent safety standards
Ergonomics	The product has been tested and found to comply with all applicable GS ergonomic requirements
EMC	FCC Class B; CISPR 22 (EN 55022) Class B; CISPR 24 (EN 55024)

Warranty	Three-year limited hardware warranty. NOTE: Certain restrictions apply. Consult the HP Customer Support Center for details.

HP MultiSeat ComputingSolution – Options

OPTIONS (sold separately)		t100	t150	ms6000	ms6005	Part Number
Hard Drives	HP 160-GB SATA 3.0-Gb/s 7200 rpm			X	X	PY277AA
	HP 250-GB SATA 3.0-Gb/s 7200 rpm			X	X	PY278AA
	HP 320-GB SATA 3.0-Gb/s 7200 rpm			X	X	FH963AA
	HP 500-GB SATA 3.0-Gb/s 7200 rpm			X	X	KW347AA
Input/Output Devices	HP USB Standard Keyboard			X	X	DT528A
	HP PS/2 Standard Keyboard	X	X			DT527A
	HP PS/2 2-Button Optical Scroll Mouse	X	X			EY703AA
	HP USB 2-Button Optical Scroll Mouse			X	X	DC172B
	HP USB and PS/2 Washable Keyboard and Mouse Kit	X	X	X	X	BU207AA
	HP PS/2 Mouse/Keyboard/Mouse Pad Kit	X	X			KF886AT
Memory PC3-10600 DIMMs Non-ECC	HP 4-GB PC3-10600 (DDR3 1333MHz) DIMM			X	X	VH638AA
	HP 2-GB PC3-10600 (DDR3 1333MHz) DIMM			X	X	AT024AA
	HP 1-GB PC3-10600 (DDR3 133 MHz) DIMM			X	X	AT023AA
Monitors	Supports VGA monitors including: HP monitors: 15", 17", 18" (dyna), 18" wide (le1851), 19", 19" wide, 20", 20" wide					
	HP Compaq LE1851wt 18-inch Widescreen LCD Monitor *(The HP Compaq LE1851wt 18-inch Widescreen LCD Monitor is the only HP monitor that can supply power to the HP MultiSeat t150 Thin Client)*	X	X	X	X	LG142AA
Brackets/Stands	HP Small Form Factor Tower Stand			X		GJ118AA
Security	Kensington lock	X	X	X	X	PC766A
	HP Business PC Security Lock			X	X	PV606AA
	HP Chassis Security Kit			X	X	AR639AA
Audio/Visual	HP Business Headset	X	X			QK550AA
	HP LCD Speaker Bar *(Speaker Bar requires optional HP MultiSeat t150 Power Adapter or HP Compaq LE1851wt 18-inch Widescreen Monitor)*		X			NQ576AT

HP MultiSeat ComputingSolution – Options

Power Supply	HP MultiSeat t150 Power Adapter NA	X	QM345AA
	HP MultiSeat t150 Power Adapter EMEA	X	QM346AA
	HP MultiSeat t150 Power Adapter APJ	X	QM347AA

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